286 arm, around the vertical stick, over the other arm, and back, new lengths being knotted on as needed. The other frame consists of a plank with two rows of holes into which pegs about 8 inches long are fitted. The arrangement of the pegs can be changed to give hanks of different lengths (Fig. 14, f). When enough of the filaments have been knotted on, the hank is removed and laid aside to be dyed. The plateau method of boiling raffia with lye and then twisting it into thread seems to be unknown.

386 [177] 824 At the present time European aniline dyes have almost supplanted the original vegetable colors in raffia weaving and only a few of the older women know the native processes. Black is made by crushing the leaves of the *lalona*, boiling them and adding ferruginous earth. When the mixture is cold the raffia is put in and soaked for a day. This gives a fine and very fast color which continues in regular use in spite of the imported dyes. Yellow is made with turmeric. The root is pounded in a mortar, mixed with cold water, and the raffia steeped in it for half a day to a day, according to the depth of color desired. It is then washed in running water and dried. This dye is still occasionally used. A good orange dye was formerly made from the roots of the *saosaoritra*, a bush or small tree. The bark from the roots was pounded to powder in a mortar and boiled for an hour with the raffia, which was then washed. This dye was never used with *lafotra*, but simply because the plant grows in the territory of the raffia weaving gentes and sparsely if at all in that of the Zafimaniry. Red was made by boiling the raffia with the bark of the *nato* tree, and a pale grayish blue was made with indigo. The *saosaoritra*, *nato*, and indigo dyes are rarely used today. All dyeing is done before the fabric is woven.

286 531 The Tanala make a very limited use of differential warp dyeing. After the chain is ready for the loom groups of threads are drawn together and tightly wrapped with raffia. The chain is then dyed, the exposed portions taking the color while the others remain uncolored. Stripes with alternate plain and colored sections are made in this way, but there are no real designs and dyeing with several colors is unknown. The technique is rarely used and only one example was collected. Threads of mixed color are made by twisting together two filaments dyed in different colors, as black and yellow.

286 The loom (*tesona*) used in raffia weaving is identical with the oldest Betsimisaraka type (Fig. 15, a). The modern Betsimisaraka type, with treadles, is unknown. The warp is laid on the loom continuously, passing round and round both beams. Tension is secured

one edge of the fabric. When the cloth is to be made into a woman's dress, the long strip which has come from the loom is cut in two and the ends of each half sewn together. The plain edges of the two sections are then sewn and the border appears at the top and bottom of the simple tubular garment.

Hafotra is a bast obtained from three different species of trees. All the Madagascar tribes use it for cordage, but its use for cloth is now limited to the Tanala and some of the neighboring Betsileo. The Imerina and Bara also made *hafotra* cloth in early times. The best *hafotra* is obtained from the *hafotra potsy*, inferior grades from the *hafotra lonke* and *hafotra ambony akondro*. *Hafotra potsy* is cream colored when prepared, the other varieties light gray. Trees 2 to 3 inches in diameter are cut into 4-foot lengths and the hard outer bark scraped away. The inner bark is then split lengthwise and taken off in a single sheet. This is done by men. The sheets of bark are taken to the village, where the women split them into ribbons about ½ inch wide. The bark is then boiled with water and wood ashes for about two hours and the mixture left standing for a day. It is then washed in running water and, while still wet, is picked into fibers suitable for thread. After this it is washed again, being kneaded on stones with the feet. It is wrung out and dried for a day in the house, never in the sun. A bundle of the still damp fiber is then hung on a hook or threaded through the links of a wooden chain (*Fig.* 16, e). The operator seats herself on the ground or on a low stool and bares her right thigh. The bundle of fiber is hung beside her, at about the level of her head. She draws down the fibers one by one and rolls them between the palm and the thigh, knotting on new fibers as needed. The finished thread is wrapped around two sticks set in the ground about 2 feet apart. When enough has been rolled to make a hank, it is removed from the sticks and laid aside to be dyed.

Even at the present time, only vegetable dyes are used for *hafotra*. The favorite color is blue, *sapitra*, which is made as follows: Indigo is pounded to powder in a mortar and dried. Banana stalks and a plant called *ambiaty* are also pounded and dried, then mixed with dried grass of the variety called *tsipontina* and the whole burned to ashes. The ash and powdered indigo are thoroughly mixed in hot but not boiling water. The yarn is put in and left over night, while the mixture cools. It is taken out, wrung dry, then put in again and left for a day. After this it is washed in running water and dried in the house, never in the sun. The same solution is used

for several successive dyings, each of which gives a lighter color. The first dyeing gives a good medium blue called *lohany* ("head"). The second gives a lighter grayish blue called *ahony* ("neck"). The third gives a greenish gray called *lavinga* ("back") and the fourth a still paler greenish gray called *foviolaza* ("tail"). The *lohany* shade is the most prized.

A brownish red called *rony* (lit. "yellow") and a dull brownish purple (*ava*) are made with the bark of the *ondo* tree. The bark is cut into small pieces and boiled with the yarn for one to two hours each morning and evening, the mixture being kept warm between boilings. Water is added from time to time. This is kept up until the right depth of color is obtained, which takes two to three days for the *rony* and four or more for the *ava*. The yarn is then washed in running water and dried. Yellow is made from turmeric, the process being the same as for raffia, and black from a mixture of tannin and ferruginous earth. The tannin is obtained from several plants, including the young leaves of the eucalyptus. Differential warp dyeing and the use of threads of mixed color are unknown.

The loom used for *lanjotra* weaving (Fig. 17, a) differs in some respects from that used for raffia. It is identical with the ancient Betsileo loom, which has recently been replaced in that tribe by looms of Imerina type. The warp is continuous, as in the raffia loom, but the beams are semicircular in section and are grooved at the ends to receive the tension ropes. They are usually made from the midribs of raffia palm leaves. The warp beam is tied to two low posts at a height of about 2½ feet but the breast beam is attached by short ropes to the ends of a wooden back rest (*tsoako*). Along either side of the loom there is a long bamboo pole one end of which rests on the warp beam and the other on the ground. These poles support the ends of the *tsoako*, the laze rods, and the heddle rod. Instead of being horizontal, like the raffia loom, the whole apparatus slants downward toward the weaver.

The heddle rod is much slenderer than that of the raffia loom, about ⅛ inch in diameter, but is also round. A continuous alternate leash of *lanjotra* cord is used (Fig. 17, b). The shed stick is round and about ¼ inch in diameter. The laze rods are made of wood and are somewhat heavier than the heddle rod. Three of them are inserted a short distance beyond the shed stick, their ends being tied together with cord. The shuttle is a plain, blunt-pointed stick about ⅛ inch in diameter and 14 inches long, about which the thread is wrapped spirally (Fig. 17, c).